

customer number 26645

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN THE APPLICATION OF

DOCKET NO.: 3202R

C. D. TIPTON, S. LAHIRI, AND M. R. BAKER

SERIAL NO.: 10/645,373

EXAMINER: V. RONESI

FILED: AUGUST 21, 2003

GROUP ART UNIT: 1714

TITLE: MULTIFUNCTIONAL DISPERSANTS

Wickliffe, Ohio

Hon. Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

DECLARATION UNDER 37 C.F.R. §1.132

I, William D. Abraham, declare as follows:

I received a B.S. degree in Chemistry in 1985 from Purdue University and a Ph.D. degree in the field of Organic Chemistry in 1990 from The University of Pittsburgh.

I have been employed by The Lubrizol Corporation since 1990. Since that time I have been responsible for inventing and preparing new anti-wear/antioxidant chemistries as a Research Chemist in the department of Chemical Synthesis, and for addressing customer service requests and performing molecular structure characterization using spectroscopy and/or chromatographic methods and method development in the department of Physical & Analytical Sciences. I have also been responsible for managing eight chemists with diverse backgrounds as supervisor of the Molecular Structure Group in the department Physical and Analytical Sciences Department. Thereafter, I spent seven years from 1998 – 2004 developing new lubricant additives and formulations as a Principal Research Scientist -- Technology Manager and Formulator in the Passenger Car Motor Oil and Heavy Duty Diesel Market Segments. For the past 3 years (since,

I hereby certify that this correspondence is being filed electronically via the USPTO EFS with the Commissioner for Patents, United States Patent & Trademark Office, P.O. Box 1450, Alexandria, Virginia 22313-1450 on:

4-3-2007
Date of Deposit

Nancy S. Dedek
Deposited by: Nancy S. Dedek

Jan. 2005) I have been developing new lubricant additives, formulations, and product lines as a Senior Fellow -- Technology Manager and Platform Developer in the Automatic Transmission Fluid and Farm Tractor Fluid Segments within the Driveline Division of Lubrizol.

As a result, I am familiar with the requirements for design of an automatic transmission fluid and the invention claimed in the above-mentioned case.

One important component of an automatic transmission is a slipping torque converter clutch. Smooth engagement of this clutch imposes exacting friction requirements on the automatic transmission fluid (ATF) used, in order to avoid the objectionable phenomenon known as shudder. The shuddering of an automatic transmission occurs when there is a problem with the clutch plates or torque converter materials appropriately mating with the corresponding steel plates or drum during engagement of the clutch. Shudder occurs when these mating parts stick or grab during engagement, that is, when their rotation, one relative to the other, comes to a stop. The result is a vibration that is normally felt by the driver of the vehicle. An appropriately designed ATF can mitigate this problem through the use of effective chemistry.

In order to evaluate the effectiveness of an ATF in controlling shudder, the Variable Speed Friction Tester (VSFT) may be used. The VSFT is equipped with a friction composite plate of a type typically used in an automatic transmission, and a steel plate with which it engages. The test measures the ratio of the change of coefficient of friction (μ) as a function of speed at very slow relative speeds. A positive slope (typically measured and reported as the slope between $V = 50$ rpm and $V = 200$ rpm) indicates, for example, that μ becomes less at lower velocities. Thus, for a positive slope or a near-zero negative slope, there is no abrupt grabbing or sticking of the components and no shudder.

The VSFT test result may be expressed as the number of hours during which a positive or near-zero negative slope is maintained. In the VSFT results, I would consider a value of -0.006 to be a borderline value, below which an ATF would fail to fully prevent shudder, while values more positive than -0.006 are acceptable.

I have examined the data presented in the Declaration of Dr. Patterson, in which she has compared the performance of comparative Example 1 with inventive Example 2. It is my opinion that the material of Example 2 provides useful anti-shudder performance for a significantly longer period of time, 7 to 10 hours in this test, depending on the specific friction material, than does the comparative Example 1.

I further declare that all statements herein made of my own knowledge are true and all statements herein made on information and belief are believed to be true. I

understand that willful false statements and the like are punishable by fine or imprisonment or both (18 U.S.C. 1001) and may jeopardize the validity of the application or any patent issuing thereon.

A handwritten signature in dark ink, appearing to read 'William D. Abraham', written over a horizontal line.

William D. Abraham

11/30/07 (date)